WHAT IS CLAIMED IS:

1. A metal foil having a surface roughened by etching, characterized in that the metal foil is made of an alloy comprising an earth-acid metal as a main component, and has a surface area at least 50 times the surface area before etching.

2. The metal foil according to claim 1, wherein the earth-acid metal is niobium.

3. The metal foil according to claim 1, wherein said alloy comprising an earth-acid metal as a main component is an alloy of an earth-acid metal with at least one element selected from the group consisting of Groups 3 to 16 as expressed by the group number of the periodic table.

4. The metal foil according to claim 1, wherein the metal foil has been partially nitrided.

5. The metal foil according to claim 4, wherein at least a part of the surface of the metal foil including the surface of inside pores has been partially nitrided.

6. The metal foil according to claim 1, wherein the metal foil has pores at least in a region spanning from the surface to a depth of 5% or more of the foil thickness in the foil thickness direction.

7. The metal foil according to claim 6, wherein the pores have an average pore diameter not larger than 10 μm.

8. The metal foil according to claim 1, wherein the concentration of impurity elements other than tantalum, niobium, oxygen, nitrogen and an alloy-forming metal element in the alloy is not larger than 300 ppm by mass.

9. The metal foil according to claim 1, which gives an electrostatic capacitance of at least 200 $\mu F/cm^2$ per area (projected area) not including pore areas of the metal foil, to a capacitor comprised of one part electrode made of the metal foil, a dielectric material formed on the surface of said metal foil by electrolytic oxidation at an imposed voltage of 10 V, and another part 1 ctrode provided on said dielectric material.

10. A metal foil having a surface roughened by etching, characterized in that the metal foil is made of an alloy comprising an earth-acid metal as a main component, and has pores at least in a region spanning from the surface to a depth of 5% or more of the foil thickness in the foil thickness direction, wherein the pores have an average pore diameter not larger than 10 μm.

11. The metal foil according to claim 10, wherein the earth-acid metal is niobium.

12. The metal foil according to claim 10, wherein said alloy comprising an earth-acid metal as a main component is an alloy of an earth-acid metal with at least one element selected from the group consisting of Groups 3 to 16 as expressed by the group number of the periodic table.

13. The metal foil according to claim 10, wherein the metal foil has been partially nitrided.

14. The metal foil according to claim 13, wherein at least a part of the surface of the metal foil including the surface of inside pores has been partially nitrided.

15. The metal foil according to claim 10, wherein the concentration of impurity elements other than tantalum, niobium, oxygen, nitrogen and an alloy-forming metal element in the alloy is not larger than 300 ppm by mass.

16. The metal foil according to claim 10, which gives an electrostatic capacitance of at least 200 $\mu F/cm^2$ per area (projected area) not including pore areas of the metal foil, to a capacitor comprised of one part electrode made of the metal foil, a dielectric material formed on the surface of said metal foil by electrolytic oxidation at an imposed voltage of 10 V, and another part electrode provided on said dielectric material.

17. A metal foil having a surface roughened by etching, which is made of an alloy comprising an earth-acid metal as a main component, and which gives an electrostatic capacitance of at least 200 $\mu F/cm^2$ per area (projected area) not including pore areas of the metal foil, to a capacitor comprised of on

part electrode made of the metal foil, a dielectric material formed on the surface of said metal foil by electrolytic oxidation at an imposed voltage of 10 V, and another part electrode provided on said dielectric material.

18. The metal foil according to claim 17, wherein the earth-acid metal is niobium.

19. The metal foil according to claim 17, wherein said alloy comprising an earth-acid metal as a main component is an alloy of an earth-acid metal with at least one element selected from the group consisting of Groups 3 to 16 as expressed by the group number of the periodic table.

20. The metal foil according to claim 17, wherein the metal foil has been partially nitrided.

21. The metal foil according to claim 20, wherein at least a part of the surface of the metal foil including the surface of inside pores has been partially nitrided.

22. The metal foil according to claim 17, which has pores at least in a region spanning from the surface to a depth of 5% or more of the foil thickness in the foil thickness direction.

23. The metal foil according to claim 17, wherein the concentration of impurity elements other than tantalum, niobium, oxygen, nitrogen and an alloy-forming metal element in the alloy is not larger than 300 ppm by mass.

24. A capacitor comprising a pair of electrodes and a dielectric material interposed between said pair of electrodes, wherein at least one of the electrodes is made of the metal foil as claimed in claim 1.

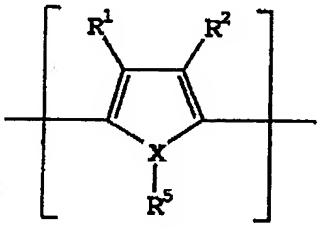
25. The capacitor according to claim 24, wherein the dielectric material comprises tantalum oxide or niobium oxide as a main component.

26. The capacitor according to claim 24, wherein the dielectric material comprises ditantalum pentoxide or diniobium pentoxide as a main component.

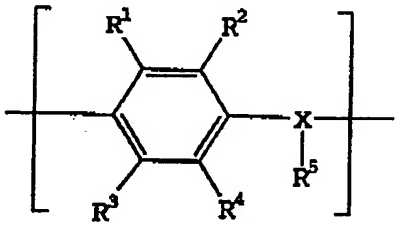
27. The capacitor according to claim 25, wherein the dielectric material has been formed by electrolytic oxidation.

28. The capacitor according to claim 24, wherein another part electrode is comprised of at least one material selected from electrolytic solutions, organic semiconductors and inorganic semiconductors.

29. The capacitor according to claim 24, wherein another part electrode is comprised of an organic semiconductor which is at least one organic semiconductor selected from the group consisting of an organic semiconductor comprising a benzopyrroline tetramer and chloranile, an organic semiconductor mainly comprising tetrathiotetracene, an organic semiconductor mainly comprising tetracyanoquinodimethane, and an organic semiconductor mainly comprising an electrically conductive polymer obtained by doping with a dopant a polymer having repeating units represented by the following formula (1) or (2):



(1)



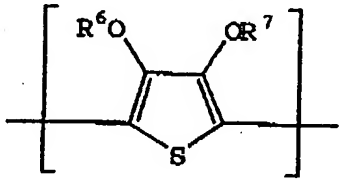
(2)

wherein R^1 to R^4 each independently represents a monovalent group selected from the group consisting of a hydrogen atom, a linear or branched, saturated or unsaturated alkyl, alkoxy or alkyl ester group having from 1 to 10 carbon atoms, a halogen atom, a nitro group, a cyano group, a primary, secondary or tertiary amino group, a trifluoromethyl group, a phenyl group and a substituted phenyl group; the hydrocarbon chains of R^1 and R^2, or the hydrocarbon chains of R^3 and R^4 may combine together with each other at an arbitrary position to form a divalent chain for forming at least one 3-, 4-, 5-, 6- or 7-memb red cyclic saturated or unsaturated hydrocarbon structure together with the carbon atoms having bonded thereto R^1 and R^2

or R^3 and R^4; the cyclic combined chain may contain a bond of carbonyl, ether, ester, amide, sulfide, sulfinyl, sulfonyl or imino at an arbitrary position; X represents an oxygen atom, a sulfur atom or a nitrogen atom; and R^5 is present only when X is a nitrogen atom, and independently represents a hydrogen atom or a linear or branched, saturated or unsaturated alkyl group having from 1 to 10 carbon atoms.

30. The capacitor according to claim 29, wherein the organic semiconductor is at least one member selected from the group consisting of polypyrrole, polythiophene, polyaniline and substitution derivatives thereof.

31. The capacitor according to claim 29, wherein the electrically conductive polymer represented by the formula (1) is an electrically conductive polymer having repeating units represented by the following formula (3):



(3)

wherein R^6 and R^7 each independently represents a hydrogen atom, a linear or branched, saturated or unsaturated alkyl group having from 1 to 6 carbon atoms, or a substituent for forming at least one 5-, 6- or 7-membered saturated hydrocarbon cyclic structure containing two oxygen elements when the alkyl groups are combined with each other at an arbitrary position; and the cyclic structure includes a structure having a vinylene bond which may be substituted, and a phenylene structure which may be substituted.

32. The capacitor according to claim 31, wherein the electrically conductive polymer is an electrically conductive polymer obtained by doping poly(3,4-ethylenedioxythiophene) with a dopant.